



17W 1751

PTO/SB/21 (09-04)

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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/533,968
	Filing Date	May 5, 2005
	First Named Inventor	Hiroshi SETOGUCHI, et al.
	Art Unit	1751
	Examiner Name	To Be Assigned
	Attorney Docket No.	MAT-8692US
Total Number of Pages in This Submission		19

ENCLOSURES (Check all that apply)		
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to TC
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		<input type="checkbox"/> Copy of Preliminary Amendment filed May 5, 2005
Remarks:		

SIGNATURE OF APPLICANT, ATTORNEY OR AGENT			
Firm Name	RatnerPrestia		
Signature			
Printed Name	Lawrence E. Ashery		
Date	November 17, 2005	Reg. No.	34,515

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:			
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Typed or Printed Name	Fran Petrillo	Date	November 17, 2005

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Office, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, ALEXANDRIA, VA 22313-1450.

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MAT-8692US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Hiroshi SETOGUCHI, et al.

Serial No.: 10/533,968

Group No.: 1751

Filed: May 5, 2005

Examiner: To Be Assigned

For: PLASMA DISPLAY DEVICE (AS
AMENDED)

Filing Receipt Corrections
Office of Initial Patent Examination
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR CORRECTED FILING RECEIPT

1. Attached is a copy of the official filing receipt received from the PTO in the above application for which issuance of a corrected filing receipt is respectfully requested.

2. There is an error with respect to the following data:

- ☒ Incorrectly entered
and/or
☐ omitted

Error in

1. ☒ Applicant's name
2. ☐ Applicants' address
3. ☒ Title
4. ☐ Filing Date
5. ☐ Serial Number
6. ☐ Foreign/PCT Application Reference
7. ☐ Other:

Correct data

1. Yoshinori TANAKA (Declaration/POA
filed 05/05/05)
- 2.
3. PLASMA DISPLAY DEVICE
(Preliminary Amendment filed 05/05/05)
- 4.
- 5.
- 6.
- 7.

3. No fee is due.

RatnerPrestia
P. O. Box 980
Valley Forge, PA 19482-0980
(610) 407-0700


Respectfully submitted,


Lawrence E. Ashery, Reg. No. 34,515

CERTIFICATE OF MAILING (37 CFR 1.8a)

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to the: Filing Receipt Corrections, Office of Initial Patent Examination, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

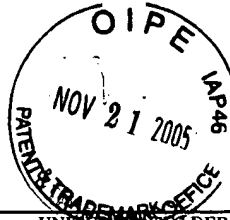
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Fran Petrillo

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APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/533,968	05/05/2005	1751	1100	MAT-8692US	5	8	4

23122
 RATNERPRESTIA
 P O BOX 980
 VALLEY FORGE, PA 19482-0980

RECEIVED

OCT 17 2005

RatnerPrestia

CONFIRMATION NO. 7894

FILING RECEIPT



OC000000017160522

Date Mailed: 10/06/2005

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

Applicant(s)

Hiroshi Setoguchi, Takatsuki-shi, JAPAN;
 Masaki Aoki, Mino-shi, JAPAN;
 Kazuhiko Sugimoto, Kyoto-shi, JAPAN;
 Yuichiro Miyamae, Takatsuki-shi, JAPAN;
 Junichi Hibino, Kyoto-shi, JAPAN;
Yoshinori Tanaka, Hirakata-shi, JAPAN;
 Keiji Horikawa, Kyoto-shi, JAPAN;

YOSHINORI

Power of Attorney: The patent practitioners associated with Customer Number 23122.

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/JP04/09508 06/29/2004

Foreign Applications

JAPAN 2003-186836 06/30/2003

Projected Publication Date: 01/12/2006

Non-Publication Request: No

Early Publication Request: No

TitlePlasma display *Device***Preliminary Class**

252

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Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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PTO/SB/01. 02 & 04 COMBINED (08-03) AW (10-03)

**DECLARATION/
POWER OF ATTORNEY
FOR UTILITY OR DESIGN
PATENT APPLICATION**

Attorney Docket Number:

First Named Inventor:

Hiroshi SETOGUCHI

COMPLETE IF KNOWN

Application Number:

Filing Date:

Art Unit:

Examiner Name:

☒ Declaration
Submitted
With Initial
Filing
(37 CFR 1.63)

☐ Declaration
Submitted after Initial
Filing (surcharge
(37 CFR 1.16 (e))
required)

☐ Supplemental
Declaration
(37 CFR 1.67)

I hereby declare that:

Each inventor's residence, mailing address, and citizenship are as stated below next to their name.

I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

PLASMA DISPLAY DEVICE

(Title of the Invention)

the specification of which

☐ is attached hereto

OR

☒ was filed on (MM/DD/YYYY) 06/29/2004 as United States Application or PCT International Application Number PCT/JP2004/009508

and was amended on (MM/DD/YYYY) _____ (if applicable). I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				Yes	No
2003-186836	Japan	06/30/2003	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet attached hereto.

Declaration/Power Of Attorney for Utility or Design Patent Application

(continued)

I hereby appoint:

☒ Practitioners at Customer Number **23122**

OR

☐ Practitioner(s) named below:

Name

Registration Number

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Direct all correspondence to:

☒ Practitioners Customer Number listed above; **OR**
☒ Correspondence Address Below

Name: RatnerPrestia

Address: P. O. Box 980

City: Valley Forge

State: PA

Zip: 19482

Country: USA

Telephone: (610) 407-0700

Fax: (610) 407-0701

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor:

☐ A Petition has been filed for this unsigned inventor.

Given Name (first and middle (if any))

Family Name or Surname

Hiroshi

SETOGUCHI

Inventor's Signature

Hiroshi Setoguchi

Date: April 12, 2005

Residence: City: Takatsuki-shi

State: Osaka

Country: Japan

Citizenship: Japanese

Mailing Address: 33-10-101, Kitashowadai-cho

Mailing Address:

City: Takatsuki-shi

State: Osaka

Zip: 569-0816

Country: Japan

☒ Additional inventors are listed on the next page.

Declaration/Power Of Attorney for Utility or Design Patent Application (continued)

Name of Second Inventor:		<input type="checkbox"/> A Petition has been filed for this unsigned inventor.	
Given Name (first and middle (if any))		Family Name or Surname	
Masaki		AOKI	
Inventor's Signature <u>Masaki Aoki</u>		Date: <u>April 12, 2005</u>	
Residence: City: Mino-shi	State: Osaka	Country: Japan	Citizenship: Japanese
Mailing Address: 5-12-1, Aoshinke			
Mailing Address:			
City: Mino-shi	State: Osaka	Zip: 562-0024	Country: Japan
Name of Third Inventor:		<input type="checkbox"/> A Petition has been filed for this unsigned inventor.	
Given Name (first and middle (if any))		Family Name or Surname	
Kazuhiko		SUGIMOTO	
Inventor's Signature <u>Kazuhiko Sugimoto</u>		Date: <u>April 12, 2005</u>	
Residence: City: Kyoto-shi	State: Kyoto	Country: Japan	Citizenship: Japanese
Mailing Address: 138-8-A-201, Hazukashishimizu-cho, Fushimi-ku			
Mailing Address:			
City: Kyoto-shi	State: Kyoto	Zip: 612-8485	Country: Japan
Name of Fourth Inventor:		<input type="checkbox"/> A Petition has been filed for this unsigned inventor.	
Given Name (first and middle (if any))		Family Name or Surname	
Yuichiro		MIYAMAE	
Inventor's Signature <u>Yuichiro Miyamae</u>		Date: <u>April 12, 2005</u>	
Residence: City: Takatsuki-shi	State: Osaka	Country: Japan	Citizenship: Japanese
Mailing Address: 7-1-144, Miyano-cho			
Mailing Address:			
City: Takatsuki-shi	State: Osaka	Zip: 569-0081	Country: Japan
<input checked="" type="checkbox"/> Additional inventors are listed on Supplemental Sheet(s).			

Declaration/Power Of Attorney for Utility or Design Patent Application (continued)

Name of Fifth Inventor:		<input type="checkbox"/> A Petition has been filed for this unsigned inventor.	
Given Name (first and middle (if any))		Family Name or Surname	
Junichi		HIBINO	
Inventor's Signature <u>Junichi Hibino</u>		Date: <u>April 12, 2005</u>	
Residence: City: Kyoto-shi	State: Kyoto	Country: Japan	Citizenship: Japanese
Mailing Address: 216, Ogawa-cho, Kamigyo-ku			
Mailing Address:			
City: Kyoto-shi	State: Kyoto	Zip: 602-0924	Country: Japan
Name of Sixth Inventor:		<input type="checkbox"/> A Petition has been filed for this unsigned inventor.	
Given Name (first and middle (if any))		Family Name or Surname	
Yoshinori		TANAKA	
Inventor's Signature <u>Yoshinori Tanaka</u>		Date: <u>April 12, 2005</u>	
Residence: City: Hirakata-shi	State: Osaka	Country: Japan	Citizenship: Japanese
Mailing Address: 2-5-17, Kuzuhata-cho, Hirakata-shi			
Mailing Address:			
City: Hirakata-shi	State: Osaka	Zip: 573-1112	Country: Japan
Name of Seventh Inventor:		<input type="checkbox"/> A Petition has been filed for this unsigned inventor.	
Given Name (first and middle (if any))		Family Name or Surname	
Keiji		HORIKAWA	
Inventor's Signature <u>Keiji Horikawa</u>		Date: <u>April 12, 2005</u>	
Residence: City: Kyoto-shi	State: Kyoto	Country: Japan	Citizenship: Japanese
Mailing Address: 138-8-A-404, Hazukashishimizu-cho, Fushimi-ku			
Mailing Address:			
City: Kyoto-shi	State: Kyoto	Zip: 612-8485	Country: Japan
<input type="checkbox"/> Additional inventors are listed on Supplemental Sheet(s).			



COPY

MAT-8692US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appln. No: To Be Assigned
Applicant: H. Setoguchi et al.
Filed: Herewith
Title: PLASMA DISPLAY
TC/A.U.:
Examiner:
Confirmation No.:
Docket No.: MAT-8692US

PRELIMINARY AMENDMENT

Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Prior to examination, please amend the above-identified application as follows:

- ☒ **Amendments to the Title** begin on page 2 of this paper.
- ☒ **Amendments to the Specification** begin on page 3 of this paper.
- ☒ **Amendments to the Claims** are reflected in the listing of claims which begins on page 9 of this paper.
- ☒ **Amendments to the Drawings** begin on page 11 of this paper.
- ☐ **Amendments to the Abstract** are on page of this paper. A clean version of the Abstract is on page of this paper.
- ☐ **Remarks/Arguments** begin on page of this paper.

DLM_I:\MAT\8692US\PRELIMINARY_AMENDMENT.DOC

Amendments to the Title:

Please replace the title with the following:

→ PLASMA DISPLAY DEVICE ←

THIS APPLICATION IS A U.S. NATIONAL PHASE APPLICATION OF PCT INTERNATIONAL APPLICATION PCT/JP2004/009508.

In addition, "Phosphor Handbook" (Ohmsha, Ltd., pages 219-220 and 225) and other non-patent publications disclose a technique in which each of these phosphors is made by the process of mixing certain raw materials and firing them at a temperature of 1000 deg-C or higher to cause a solid phase reaction.

The discharge failures can be prevented to some extent if all the phosphors are composed of the materials having positive charges (+), such that the panel employs a combination of green phosphor made of a mixture of any of $\text{BaAl}_{12}\text{O}_{19}:\text{Mn}$, $\text{BaAl}_{12}\text{O}_{19}:\text{Mn}$, $\text{BaMgAl}_{10}\text{O}_{23}:\text{Mn}$, $\text{BaMgAl}_{10}\text{O}_{17}:\text{Mn}$, (Y, Gd) $\text{BO}_3:\text{Tb}$ and $\text{La PO}_4:\text{Tb}$, all having positive charges (+), in place of the Zn_2SiO_4 of negative charge (-), blue phosphor of $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}$, and red phosphor of any of (Y, Gd) $\text{BO}_3:\text{Eu}$ and $\text{Y}_2\text{O}_3:\text{Eu}$.

Please replace the paragraph, beginning at page 9, line 26, with the following rewritten paragraph:

Fig. 4 is a cross sectional view of PDP 100. Dimension "W" of the spaces formed by barrier ribs 109, as shown in Fig. 4, is fixed to a given value, or approx. 130μm to 240μm, for example in the case of high-definition TV of 32 to 50 inch size. Inside the grooves between barrier ribs 109, there are phosphor layers formed of an yttrium oxide group red phosphor (R) of as red phosphor layers 110R, of which surfaces are charged positive (+), as well as phosphor layers formed of a blue phosphor (B) as blue phosphor layers 110B, of which surfaces are also charged positive (+). A material used for green phosphor layers 110G is phosphor particles made of a mixture of one of green phosphor compounds, $\text{CaAl}_{12}\text{O}_{19}:\text{Mn}$, $\text{SrAl}_{12}\text{O}_{19}:\text{Mn}$, $\text{EuAl}_{12}\text{O}_{19}:\text{Mn}$ and $\text{ZnAl}_{12}\text{O}_{19}:\text{Mn}$ having a magnetoplumbite crystal structure and surfaces of which are charged positive (+), and another green phosphor of any of aluminate group compounds, $(\text{Y}_{1-a-y}\text{Gd}_a)\text{BO}_3:\text{Tb}_y(\text{Y}_{1-x}\text{Gd}_x)_3(\text{BO}_3)_4:\text{Tb}$, $(\text{Y}_{1-a-y}\text{Gd}_a)(\text{Ga}_{1-x}\text{Al}_x)_3(\text{BO}_3)_4:\text{Tb}$, $(\text{Y}_{1-a-y}\text{Gd}_a)(\text{Ga}_{1-x}\text{Al}_x)_3(\text{BO}_3)_4:\text{Ce}_y\text{Tb}_y(\text{Y}_{1-x}\text{Gd}_x)_3(\text{Ga}_{1-x}\text{Al}_x)_3(\text{BO}_3)_4:\text{Tb}$, $(\text{Y}_{1-a-y}\text{Gd}_a)(\text{Ga}_{1-x}\text{Al}_x)_3(\text{BO}_3)_4:\text{Ce}$ and $\text{Y}_3(\text{Ga}_{1-x}\text{Al}_x)_3\text{Ga}_2\text{O}_{12}:\text{Tb}$ containing yttria and of which surfaces are also charged positive (+).

Please replace the paragraph, beginning at page 11, line 2, with the following rewritten paragraph:

The front panel and the rear panel produced as described above are placed together in a manner that the individual electrodes on the front panel cross at right angles with the address electrodes on the rear panel, and they are hermetically sealed by putting sealing frit throughout the perimeter of the panels and firing it at about 450 deg-C for 15 minutes to form hermetic seal layer 121. After that, the interior of discharge space 122 is evacuated to a high vacuum of 1.1×10^{-4} Pa, for instance, and filled with discharge gas comprising a mixture of inert gases such as He-Xe group, Ne-Xe group, He-Ne-Xe group and Ne-Kr-Xe group gases to a predetermined pressure (i.e., 50 to 80kPa) with 5% or more in the partial pressure of Xe. PDP 100 is thus manufactured. This panel is completed after being subjected to an aging process for 5 hours under the conditions of ~~175V~~185V in discharge voltage and 200kHz in discharge frequency.

Please replace the paragraph, beginning at page 13, line 2, with the following rewritten paragraph:

A material used as the green phosphor is any of magnetoplumbite group compounds defined as $M_{1-x}Al_{12}O_{19}:Mn_x$ (where "M" denotes one of Ca, Sr, Eu and Zn, and a desirable range of "ax" is $0.01 \leq a-x \leq 0.06$) having stable crystal structures, yttria group compounds with or without aluminum defined as $(Y_{1-a-y}Gd_a)(BO_3)_4:Tb_y$, $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$, $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Ce_y$, Tb_y , and $(Y_{1-a-y}Gd_y)_3(Ga_{1-x}Al_x)_5O_{12}:Tb_yY_3(Ga_{1-x}Al_x)_5O_{12}:Tb$, and a mixture of any of the above phosphors, all of which surfaces are charged positive. It is desirable here that substituted value "x" of Al for Ga, substituted value "a" of Gd for Y, and another substituted value "y" of Tb for Y are arranged to be within ranges of $0.1 \leq x \leq 1.0$, $0 \leq a \leq 0.9$ and $0.02 \leq y \leq 0.4$ respectively.

Please replace the paragraph, beginning at page 15, line 27, with the following rewritten paragraph:

Described next pertains to the green phosphors of $M_{1-x}Al_{12}O_{19}:Mn_x$, $M_{1-a}Al_{12}O_{19}:Mn_a$ and $(Y_{1-a-y}Gd_a)(Al_{1-x}Ga_x)_3(BO_3)_4:Tb_y(Y_{1-x}Gd_x)Al_3(BO_3)_4:Tb$.

Please replace the paragraph, beginning at page 16, line 2, with the following rewritten paragraph:

To start with, description is given of the magnetoplumbite crystal group compound of $M_{1-x}Al_{12}O_{19}:Mn_x$, $M_{1-a}Al_{12}O_{19}:Mn_a$ (where "M" denotes one of Ca, Sr, Eu and Zn). Since the luminous material Mn is substituted by element M, this compound is expressed by the chemical formula of $(M_{1-x}Mn_x)Al_{12}O_{19}(M_{1-a}Mn_a)Al_{12}O_{19}$. In the case of using the solid phase process, raw materials of calcium oxide (CaO), strontium oxide (SrO), europium oxide (Eu_2O_3), zinc oxide (ZnO), aluminum oxide (Al_2O_3) and the luminous material of manganese carbonate (MnO_2) are combined according to the required mole ratio of the oxide compounds and predetermined "a" and "x" values, in a manner so that their composite becomes $(M_{1-x}Mn_x)Al_{12}O_{19}(M_{1-a}Mn_a)Al_{12}O_{19}$. The combined materials are then mixed with a small amount of flux (AlF_3 and NH_4F). Next, the mixture is fired at a temperature of 950 to 1,300 deg-C for 2 hours in an air ambient. After the produce is crushed lightly to an extent that cohered lumps are loosened, it is fired at 900 to 1,200 deg-C in an nitrogen atmosphere or nitrogen and hydrogen atmosphere. The produced particles are pulverized, and annealed at 500 to 900 deg-C in an oxygen atmosphere

or oxygen and nitrogen atmosphere in order to remove oxygen defects and to reduce their surfaces that adsorb water and hydrocarbon gases. The green phosphor which is charged positive is hence produced.

Please replace the paragraph, beginning at page 17, line 8, with the following rewritten paragraph:

In the process of making a mixed solution, raw materials of yttrium nitrate, $Y_2(NO_3)_3$, gadolinium nitrate, $Gd_2(NO_3)_3$, boric acid, H_3BO_3 , and europium nitrate, $Eu_2(NO_3)_3$ are mixed to that a mole ratio of (Y,Gd), B, and Eu must become 1-X:2:X (where $0.05 \leq X \leq 0.20$) as well as a ratio of 65:35 in the amount of Y and Gd elements. The mixed materials are then fired at 1,200 to 1,350 deg-C for 2 hours in an air ambient, and classified to obtain the red phosphor. Since the red phosphor is fired in the air ambient, it contains comparatively small number of oxygen defects even if it is not annealed in an oxygen and nitrogen atmosphere. However, it is desirable to anneal it again because defects may develop in the process of classification.

Please replace the paragraph, beginning at page 18, line 12, with the following rewritten paragraph:

As described above, green phosphors used in this invention are the magnetoplumbite group phosphor of $M_{1-a}Al_{12}O_{19}:Mn_a$ (where "M" denotes one of Ca, Sr, Eu and Zn) containing aluminum and of which surfaces are charged positive (+), and $(Y_{1-a-y}Gd_y)BO_3:Tb_y(Y_{1-x}Gd_x)BO_3:Tb_y$, $(Y_{1-a-y}Gd_y)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y(Y_{1-x}Gd_x)Al_3(BO_3)_4:Tb_y$, $(Y_{1-a-y}Gd_y)(Ga_{1-x}Al_x)_3(BO_3)_4:Ce_yTb_y(Y_{1-x}Gd_x)Al_3(BO_3)_4:Ce_yTb_y$, $(Y_{1-a-y}Gd_y)(Ga_{1-x}Al_x)_5O_{12}:Tb_yY_3Al_3Ga_2O_{12}:Tb_y$ containing yttria and all of which surfaces are also charged positive (+).

Please replace the Table, beginning at page 19, line 12, with the following rewritten Table:

[Table 1]

Sample No.	Type and Combination of Green Phosphor	Type of Blue Phosphor	Type of Red Phosphor
1	$Ca_{1-a}(Ga_{1-x}Al_x)_{12}O_{19}:Mn_a$ $a=0.01, x=0.5$	$BaMgAl_{10}O_{17}:Eu$	$(Y,Gd)BO_3:Eu$
2	$Sr_{1-a}(Ga_{1-x}Al_x)_{12}O_{19}:Mn_a$ $a=0.02, x=1.0$	Same as above	Same as above
3	$Eu_{1-a}(Ga_{1-x}Al_x)_{12}O_{19}:Mn_a$ $a=0.04, x=1.0$	Same as above	Same as above
4	$Mg_{1-a}(Ga_{1-x}Al_x)_{12}O_{19}:Mn_a$ $(Ga_{1-x}Al_x)_2O_4:Mn_a$ $a=0.03, x=0.5$	Same as above	Same as above
5	$Zn_{1-a}(Ga_{1-x}Al_x)_{12}O_{19}:Mn_a$ $(Ga_{1-x}Al_x)_2O_4:Mn_a$ $a=0.03, x=1$	$(Ba,Sr)MgAl_{10}O_{17}:Eu$	$Y_2O_3:Eu$
6	$Sr_{1-a}(Ga_{1-x}Al_x)_{12}O_{19}:Mn_a$ $(Ga_{1-x}Al_x)_2O_4:Mn_a$ $a=0.03, x=1$	Same as above	Same as above

7	Mixture of sample no. 1 and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$ $a=0, x=0.1$ and $y=0.02$ (mixing ratio of 45:55)	Same as above	Same as above
8	Mixture of sample no. 2 and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$ $a=0.5, x=0.5$ and $y=0.3$ (mixing ratio of 45:50)	Same as above	Same as above
9	Mixture of sample no. 3 and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Ce_y, Tb_y$, $a=0.9, x=1$ and $y=0.02$ (mixing ratio of 50:50)	Same as above	Same as above
10	Mixture of sample no. 4 and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$ $a=0, x=1$ and $y=0.4$ (mixing ratio of 40:60)	Same as above	Same as above
11	Mixture of sample no. 5 and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$ $a=0.5, x=0.8$ and $y=0.1$ (mixing ratio of 40:60)	Same as above	Same as above
12	Mixture of sample no. 6 and $(Y_{1-a-y}Gd_a)_3(Ga_{1-x}Al_x)_5O_{12}:Tb_y$ $a=0, x=1$ and $y=0.03$ (mixing ratio of 30:60) $(Y_{1-y})_3(Ga_{1-x}Al_x)_5O_{12}:Tb_y$ $x=1$ and $y=0.03$ (mixing ratio of 30:60)	BaMgAl ₁₀ O ₁₇ :Eu	(Y, Gd)BO ₃ :Eu
13	Mixture of sample no. 4 and $(Y_{1-a-y}Gd_a)BO_3:Tb_y$ $a=0.5$ and $y=0.03$ (mixing ratio of 40:60)	Same as above	Same as above
14*	Mixture of Zn ₂ SiO ₄ :Mn and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3BO_3:Tb_y$ $a=0.5, x=1$ and $y=0.03$ (mixing ratio of 50:50)	Same as above	Same as above
15*	Mixture of BaAl ₁₂ O ₁₇ :Mn and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3BO_3:Tb$ $a=0.5, x=1$ and $y=0.03$ (mixing ratio of 50:50)	Same as above	Same as above
16*	Zn ₂ SiO ₄ :Mn	Same as above	Same as above
17*	BaMgAl ₁₄ O ₂₃ :Mn, Eu	Same as above	Same as above
18*	BaAl ₁₂ O ₁₉ :Mn	Same as above	Same as above
19*	Mixture of BaAl ₁₂ O ₁₉ :Mn and LaPO ₄ :Tb (mixing ratio of 50:50)	Same as above	Same as above

* Sample numbers 14 to 19 are reference samples for comparison.

Please replace the paragraph, beginning at page 21, line 2, with the following rewritten paragraph:

Phosphor particles used as the green phosphors of samples 7 to 13 are a variety of mixed combinations between one of the magnetoplumbite group compounds $M_{1-x}Al_{12}O_{19}:Mn_x$ $M_{1-a}Al_{12}O_{19}:Mn_a$ (where M represents one of Ca, Sr, Eu and Zn) and one of yttria group compounds $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y(Y_{1-b-y}Gd_b)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$, $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Ce_yTb_y(Y_{1-b-y}Gd_b)_3(Ga_{1-x}Al_x)_5O_{12}:Ce_yTb_y$ and $(Y_{1-a-y}Gd_a)_3(Ga_{1-x}Al_x)_5O_{12}:Tb_y$ $(Y_{1-a-y}Gd_a)BO_3:Tb_y$ $(Y_{1-b-y}Gd_b)BO_3:Tb_y$ which are charged positive. Also, phosphor particles used are one of (Ba,Sr) $MgAl_{10}O_{17}:Eu$ and $BaMgAl_{10}O_{17}:Eu$ as the blue phosphors, and one of $Y_2O_3:Eu$ and $(Y, Gd)BO_3:Eu$ as the red phosphors. Table 1 also shows individual values of "a", "x", "b" and "y", and kinds of the M element.

Please replace the paragraph, beginning at page 21, line 11, with the following rewritten paragraph:

The green phosphors of samples 14 to 19 for the comparison purpose are phosphor materials, each containing any one of the conventional chemical compound $Zn_2SiO_4:Mn$, β -alumina crystal compounds $BaAl_{12}O_{19}:Mn$ $BaAl_{12}O_{17}:Mn$ and $BaMgAl_{14}O_{23}:Eu, Mn$, and phosphoric acid compound $LaPO_4:Tb$, all of which are charged negative (-). These samples also use the blue phosphor of $BaMgAl_{10}O_{17}:Eu$, and the red phosphor of $(Y, Gd)BO_3:Eu$. Table 1 shows compositions of the individual phosphors.

Please replace the paragraph, beginning at page 23, line 1, with the following rewritten paragraph:

Table 2 shows results of the above experiments 1 through 4 on the rates of change in the brightness degradation of the green color, and the brightness of as well as the full-on white screen, and also presence and absence of the address error.

Please replace the paragraph, beginning at page 23, line 4, with the following rewritten paragraph:

As shown in Table 2, the green phosphors provided in the reference samples 14 through 19 are a mixture of $Zn_2SiO_4:Mn$ and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y(Y, Gd)BO_3:Tb$ for the sample 14, a mixture of $BaAl_{12}O_{19}:Mn$ and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y(Y, Gd)BO_3$ for the sample 15, $Zn_2SiO_4:Mn$ for the sample 16, $BaMgAl_{14}O_{23}:Mn, Eu, Mn$ for the sample 17, $BaAl_{12}O_{19}:Mn$ for the sample 18, and a mixture of $BaAl_{12}O_{17}:Mn$ and $LaPO_4:Tb$ for the sample 19, and the blue phosphors provided are $(Ba, Sr)MgAl_{10}O_{17}:Eu$ $BaSrMgAl_{10}O_{17}:Eu$ for all of them. Therefore, as shown in Table 2 large amounts of water and hydrocarbon gases were adsorbed by these phosphors. The amounts of adsorbed water, in particular, were 2 to 5 times as large as compared to those of the embodied samples of this invention. The amounts of hydrocarbon gases were also larger by 2 to 3 times, although absolute amounts of them are 1/5 to 1/10 of the water.

Please replace the paragraph, beginning at page 25, line 1, with the following rewritten paragraph:

To this contrary, all of the panels having the green, blue and red color combinations of samples 1 to 13 showed only small degrees of change in the brightness of the individual colors attributable to the ultraviolet rays (in 147nm) and the discharge sustaining pulses, and they did not exhibit any reduction in the color temperature, address errors, and clogging of the nozzle in the process of depositing the phosphors. This is because they use the green phosphors made of any one or a mixed combination of $M_{1-x}Al_{12}O_{19}:Mn_x$, $M_{1-a}Al_{12}O_{19}:Mn_b$ of the magnetoplumbite crystal structure containing aluminum, and $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y(Y_{1-b-y}Gd_b)(Ga_{1-x}Al_x)_3(BO_3)_4:Tb_y$, $(Y_{1-a-y}Gd_a)(Ga_{1-x}Al_x)_3(BO_3)_4:Ce_yTb_y(Y_{1-b-y}Gd_b)(Ga_{1-x}Al_x)_5O_{12}:Ce_yTb_y$ and $(Y_{1-a-y}Gd_a)_3(Ga_{1-x}Al_x)_5O_{12}:Tb_y(Y_{1-b-y}Gd_b)BO_3:Tb_y$ of the yttria group containing yttrium or aluminum, instead of the conventional green phosphors which are liable to adsorb water and hydrocarbon. In other words, they restrict release of the water and hydrocarbon inside the panels, and prevent degradation in the brightness due to the discharge and address errors attributable to the deterioration of MgO.

Amendments to the Claims: This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of Claims:

1. (Original) A plasma display device provided with a plasma display panel comprising a plurality of columns of discharge cells having one of a single color and multiple colors, and a phosphor layer disposed in each of the discharge cells, the phosphor layer having a color corresponding to the each discharge cell for emitting light when excited by ultraviolet rays, wherein

the phosphor layer includes a green color phosphor comprising a phosphor material defined by a general formula of $M_{1-x} Al_{12} O_{19} : Mn_x$ (where "M" denotes one of Ca, Sr, Eu and Zn).

2. (Original) A plasma display device provided with a plasma display panel comprising a plurality of columns of discharge cells having one of a single color and multiple colors, and a phosphor layer disposed in each of the discharge cells, the phosphor layer having a color corresponding to the each discharge cell for emitting light when excited by ultraviolet rays, wherein

the phosphor layer includes a green color phosphor comprising a mixture of a phosphor material defined by a general formula of $M_{1-x} Al_{12} O_{19} : Mn_x$ (where "M" denotes one of Ca, Sr, Eu and Zn) and one of phosphor materials defined by general formulae of $(Y_{1-a-y} Gd_a) (Ga_{1-x} Al_x)_3 (BO_3)_4 : Tb_y$, and $(Y_{1-a-y} Gd_a) (Ga_{1-x} Al_x)_3 (BO_3)_4 : Ce_y, Tb_y$.

3. (Original) A plasma display device provided with a plasma display panel comprising a plurality of columns of discharge cells having one of a single color and multiple colors, and a phosphor layer disposed in each of the discharge cells, the phosphor layer having a color corresponding to the each discharge cell for emitting light when excited by ultraviolet rays, wherein

the phosphor layer includes a green color phosphor comprising a mixture of a phosphor material defined by a general formula of $M_{1-x} Al_{12} O_{19} : Mn_x$ (where "M" denotes one of Ca, Sr, Eu and Zn) and another phosphor material defined by a general formula of $(Y_{1-a-y} Gd_a) BO_3 : Tb_y$.

4. (Original) A plasma display device provided with a plasma display panel comprising a plurality of columns of discharge cells having one of a single color and multiple colors, and a phosphor layer disposed in each of the discharge cells, the phosphor layer having a color

corresponding to the each discharge cell for emitting light when excited by ultraviolet rays, wherein

the phosphor layer includes a green color phosphor comprising a mixture of a phosphor material defined by a general formula of $M_{1-x} Al_{12} O_{19} : Mn_x$ (where "M" denotes one of Ca, Sr, Eu and Zn) and another phosphor material defined by a general formula of $(Y_{1-a-y} Gd_a) (Ga_{1-x} Al_x)_5 O_{12} : Tb_y$.

5. (Currently Amended) The plasma display device according to ~~one of claim 1 to claim 4~~, wherein a value "x" in the general formula of $M_{1-x} Al_{12} O_{19} : Mn_x$ (where "M" denotes one of Ca, Sr, Eu and Zn) is within a range of $0.01 \leq x \leq 0.06$.

6. (New) The plasma display device according to claim 2, wherein a value "x" in the general formula of $M_{1-x} Al_{12} O_{19} : Mn_x$ (where "M" denotes one of Ca, Sr, Eu and Zn) is within a range of $0.01 \leq x \leq 0.06$.

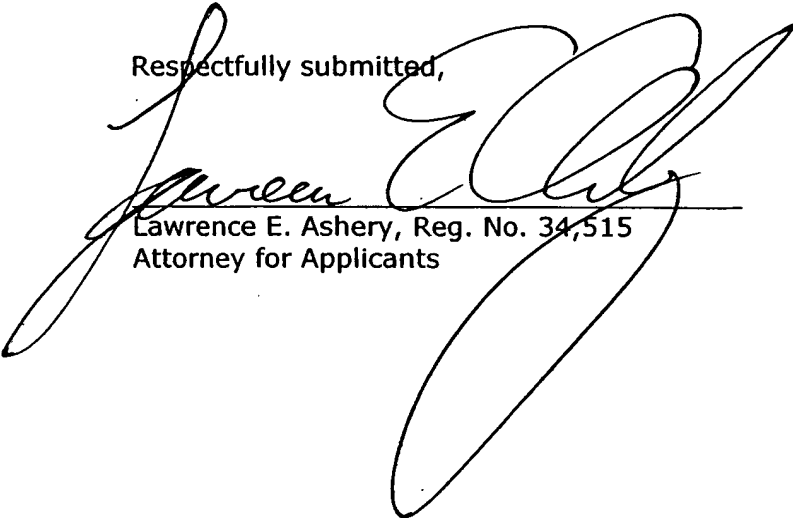
7. (New) The plasma display device according to claim 3, wherein a value "x" in the general formula of $M_{1-x} Al_{12} O_{19} : Mn_x$ (where "M" denotes one of Ca, Sr, Eu and Zn) is within a range of $0.01 \leq x \leq 0.06$.

8. (New) The plasma display device according to claim 4, wherein a value "x" in the general formula of $M_{1-x} Al_{12} O_{19} : Mn_x$ (where "M" denotes one of Ca, Sr, Eu and Zn) is within a range of $0.01 \leq x \leq 0.06$.

Amendments to the Drawings:

Please delete page "5/5" of the drawings, also labeled as "Reference marks in the drawings" in its entirety.

Respectfully submitted,


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Kathleen Libby